



	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2
--	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	---

FIG. 1A

V F H S V G N L E T L I L D S N P L A C	367
GTC TTC CAC TCG GTG GGC AAC CTG GAG ACA CTC ATC CTG GAC TCC AAC CCG CTG GCC TCC	1231
D C R L L W V F R R R W R L N F N R Q Q	387
GAC TGT CCG CTC CTG TGG GTG TTC CCG CCG CCG TGG CCG CTC AAC TTC AAC CCG CAG CAG	1291
P T C A T P E F V Q G K E F K D F P D V	407
CCC ACG TGC GCC ACG CCC GAG TTT CTC CAG GGC AAG GAG TTC AAG GAC TTC CCT GAT GTG	1351
L L P N Y F T C R R A R I R D R K A Q Q	427
CTA CTG CCC AAC TAC TTC ACC TGC CCG CCG GCC CCG ATC CCG GAC CCG AAG GCC CAG CAG	1411
V F V D E G H T V Q F V C R A D G D P P	447
GTG TTT GTG GAC GAG GGC CAC ACG GTG CAG TTT GTG TGC CCG GCC GAT GGC GAC CCG CCG	1471
P A I L W L S P R K H L V S A K S N G R	467
CCC GCC ATC CTC TGG CTC TCA CCC CGA AAG CAC CTG GTC TCA GCC AAG AGC AAT GGG CCG	1531
L T V F P D G T L E V R Y A Q V Q D N G	487
CTC ACA GTC TTC CCT GAT GGC ACG CTG GAG GTG CCG TAC GCC CAG GTA CAG GAC AAC GCC	1591
T Y L C I A A N A G G N D S M P A H L H	507
ACG TAC CTG TGC ATC CCG GCC AAC CCG GGC GGC AAC GAC TCC ATG CCC GCC CAC CTG CAT	1651
V R S Y S P D W P H Q P N K T F A F I S	527
GTG CCG AGC TAC TGG CCC GAC TGG CCC CAT CAG CCC AAC AAG ACC TTC GCT TTC ATC TCC	1711
N Q P G E G E A N S T R A T V P F P F D	547
AAC CAG CCG GGC GAG GGA GAG GCC AAC AGC ACC CCG GCC ACT GTG CCT TTC CCC TTC GAC	1771
I K T L I I A T T M G F I S F L G V V L	567
ATC AAG ACC CTC ATC ATC CCC ACC ACC ATG GGC TTC ATC TCT TTC CTG GGC GTC GTC CTC	1831
F C L V L L F L W S R G K G N T K H N I	587
TTC TGC CTG GTG CTG CTG TTT CTC TGG AGC CCG GGC AAG GGC AAC ACA AAG CAC AAC ATC	1891
E I E Y V P R K S D A G I S S A D A P R	607
GAG ATC GAG TAT GTG CCC CGA AAG TCG GAC GCA GGC ATC AGC TCC GCC GAC GCG CCC CCG	1951
K F N M K M I *	615
AAG TTC AAC ATG AAG ATG ATA TGA	1975
GGCCCGGGCGGGGGGGCAGGGACCCCCGGGGGGGGGGCGGCAAGGGGCGCTGGCCGCCACCTGCTCACTCTCCAGTCC	2054
TTCGCACTCTCTGCGCTACCGCTTCTACACAGGTTCTCTTTCTCCCTCTCCGCTCTCGTCTCCCTCTCTGCCCCCGCCAGCC	2133
CTCACCACTGCGCTCTCTCTACCGAGGACCTCAGAGGCCGAGACCTGGGGACCCCACTACACAGGGGCATTGACAGAC	2212
TGGAGTTTAAAGCCGACGACCGGACACCGGGCAGAGTCAATAATTCAATAAAAAAGTTACGAACTTTCTCTGTTACTTG	2291
GGTTTCAATAATTATGGATTTTATGAAAACCTTGAATAATAAAAAAAAAAAAAAAAAAAG	2351

FIG. 1B

	M A G S P	5
GAATTGGGACAGAGGCCAGCCATGTCTCCCGSG/MCGRARGCCCCGGTCCCTCGGGGCACC	ATG GCG GGG TCG CCG	72
L L W G :P R A G G V G L L V L L L L G L		25
TTG CTC TGG GGG CGG CGG GCC GGG GCG CTC GGC CTY TTG GTG CTG CTG CTG CTC GGC CTG		132
F R P P P A L C A R P V K E P R G L S A		45
TTC CGG CGG CCC CCC CGG CTC TTC GCG CGG CGG GTA AAG GAG CCC CGC GGC CTA AGC GCA		132
A S P P L A E T G A P R R F R R S V P R		65
GCG TCT CCG CCC TTG GCT GAG ACT GCG CCT CCG CGC TTC CGG CGG TCA GTG CCC CGA		252
G E A A G A V Q E L A R A L A H L L E A		85
GCT GAG GCG GCG GCG GCG GTG CAG GAG CTC GCG CGG GCG CTG GCG CAT CTG CTG GAG GCG		312
E R Q E R A R A E A Q E A E D Q Q A R V		105
GAA COT CAG GAG CGG GCG CGG GCG GAG GCG CAG GAG GCT GAG GAT CAG CAG GCG CGC GTC		372
L A Q L L R V W G A P R N S D P A L G L		125
CTG GCG CAG CTG CTG CGC CTC TGG GCG GCG CCC CGC AAC TCT GAT CGG GCT CTG GCG TTG		432
D D D P D A P A A Q L A R A L L R A R L		145
GAC GAC GAC CCC GAC CGG CCT GCA GCG CAG CTC GCT CGC GCT CTG CTC CGC GCG CCC CTY		492
D P A A L A A Q L V P A P V P A A A L R		165
GAC CCT GCG GCG CTA GCA GCG CAG CTT GTC CCC GCG CCC GTC CCC GCG GCG GCG CTC CGA		552
P R P P V Y D D G P A G P D A E E A G D		185
GCG CGG CCC CGG GTC TAC GAC GAC GCG CCC GCG GCG CGG GAT COT GAG GAG GCA GCG GAC		612
E T P D V D P E L L R Y L L G R I L A G		205
GAG ACA CCC GAC GTG GAC CCC GAG CTC TTG AGG TAC TTG CTG GGA CGG ATT CTT GCG GGA		672
S A D S E G V A A P R R L R R A A D H D		225
AGC CGG GAC TTC GAG GCG GTG GCA GCG CGG CGC CGC CTC CGC COT GCG GCG GAC CAC GAT		732
V G S E L P P E G V L G A L L R V K R L		245
GTG GCG TCT GAG CTC CCC COT GAG GCG GTG CTC GGG GCG CTG CTG COT GTG AAA CGC CTA		792
E T P A P Q V P A R R L L P P *		261
GAG ACC CGG GCG CCC CAG GTG CCT GCA CGC CGC CTC TTG CCA CCC TGA		840
GCAC TGCCCGCATCCLTGCCACTCTGGGACCCAGAAGTCCCCCCCACATCCCCCACACAGGACTGCTCCCCCCCAGCAC		919
GTCTTAGAGCAAATAATCCCCCGCCA GCACGCCCTCTCA CCCTGAGATCCCTAACCCCTGGC		979

979

Percent Similarity: 49.308 Percent Identity: 29.412

T79	1	MLAGGVRSMPSPLLACWQPILLVLGSVLGS..ATGCPPRCECSAQDR.	47
		: : : : : : : : : : : : : : . . .	
D45913	1MARLSTGKAAC.QVVLGLLITSLTESSILTSECPQLCVCEIRPWF	44
T79	48AVLCHRKRFVAVPEGIPTETRLLDLGKNRIKTLNQDEFAS	87
		. : : : : : : : .	
D45913	45	TPQSTYREATTVDCNDLRLTRIPGNLSSDTQVLLQLSNNI.....	84
T79	88	FPHLEELNENIVSAVEPGAFNNLFNLRITLGLRSNRLKLIPLGVFTGLS	137
		: : : : : : : :	
D45913	85AKTVDELQQLFNLTEDFSQNNFTNIKEVGLANLT	119
T79	138	NLTKLDTRENKIVILLDYMFDLYNLKSLEVGDNDLVYISHRAFSGLNLSL	187
		. . . : : . . . : : . .	
D45913	120	QLTTLHLEENQISEMTDYCLQDLSNLQELYINHNQISTISANAFSGLKNL	169
T79	188	EQLTLEKCNLTISIPTREALSHLHGLIVLRLRHLNINAIIRDYSFKRLYRLKV	237
		. : : : : : : : : : : . : .	
D45913	170	LRLHLNSNKLKVIDSRWFDSTPNLEILMIGENFPVIGILDMNFRPLSNLRS	219
T79	238	LEISHWPYLDTMTPNCLYGLN.LTSLSITHCNLTAVPYLAVRHLVYLRFL	286
		: . : : : . : : : . . : : : . :	
D45913	220	LVLAG.MYLTDPGNALVGLDSLESLSFYDNKLIKVPQLALQKVPNLKFL	268
T79	287	NLSYNPISTIEGSMHELLRLQEIQLVG.GQLAVVEPY.....	323
		: . . : : : : : : : : . : . :	
D45913	269	DLNKNPIHKIQEGDFKNMLRLKELGINNMGELVSVDRYALDNLPELTKLE	318
T79	324AFRGLNYLRVLNVSGNQLTLEESVFHSGVGNLETIL	360
		: : : : : . . : : : :	
D45913	319	ATNNPKLSYIHLAFLRSVPALESMLNNAALNAVYQKTVESLPNLREISI	368
T79	361	DSNPLACDCRLLWVFRRLNFRNRQQPT.CATPEFVQGKEFKDFPDVLL	409
		. : : : : : . . . : : : :	
D45913	369	HSNPLRCDCVIHWINSNKTNIREFMEPLSMFCAMPPEYRGQVK...EVLI	415
T79	410	PNYFT.CRRARIRDRKAQQVFVDEGHTVQFVCRADGDPFPAILWLSPRKH	458
		. : . . : : : : : : : : : . . : .	
D45913	416	QDSSEQCLPMISHDTFPNHLNMDIGTTFLDCRAMAEPEPEIYWVTPIGN	465
T79	459	LVSAS.NGRLTVFPDGTLEVRYAQVQDNGTYLCIAANAGGNDSPAHLLH	507
		: : : . : : : : : : : : : . . .	
D45913	466	KITVETLSDKYKLSSEGTLIANIQIEDSGRYTCVAQNVQGADTRVATIK	515
T79	508	V.....RSYSPDWPHQ	518
		: : : : : : : 	
D45913	516	VNGTLLDGAQVLKIYVKQTESHSILVSWKVNSNVMTSNLKWSSATMKIDN	565
T79	519	PNKTF.....AFISNQPGEGEANSTRA	540

FIG. 3A

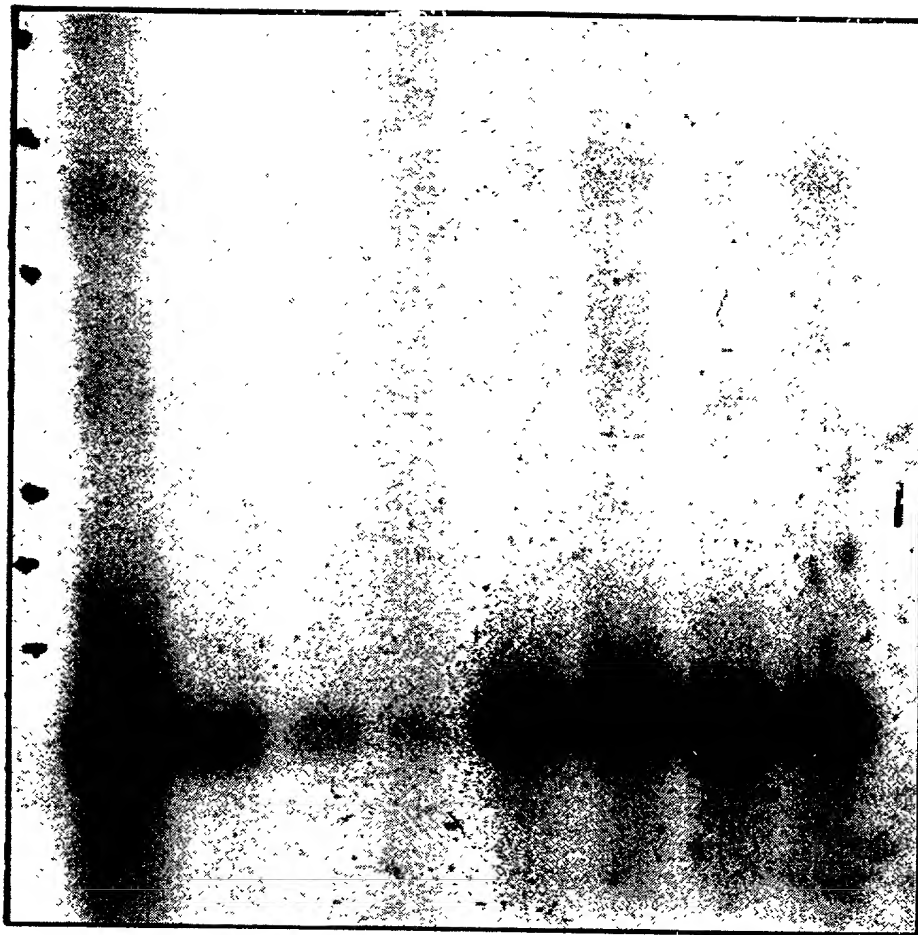
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D45913 566 PHITYTARVPVDVHEYNLTHLQBSTDYEVCLTVSNIHQQTQKSCVNVTTK 615
T79 541 TVPFPFDIKTLIIATTMGFI..SFLGVVLFCLVLLFLWSRGKGNTRYHIE 588
D45913 616 TAAFALDISDHETSTALAAVMGSMFAVISLASIAIYIAKRFRKRYHSL 665
T79 589 IEYVPRKSDAGISSADAPRKFNMMI..... 614
D45913 666 KKYMOKTSSIPLNEL.YPPLINLWEADSDKDKDGSADTKPTQVDTSRSY 714

```

FIG. 3B

FIG. 4



205710" 68920860

T R P I L V I H D E Q K G P E V T S N	19
CC ACG CGT CCG ATC TTG GTC ATC CAC GAT GAA CAG AAG GGG CCG GAA GTG ACC TCC AAT	59
A A L T L R N F C N W Q K Q H N P P S D	39
GCT CCC CTC ACT CTG CCG AAC TTT TCC AAC TGG CAG AAG CAG CAC AAC CCA CCC AGT GAC	119
R D A E H Y D T A I L F T R Q D L C G S	59
CCG GAT GCA GAG CAC TAT GAC ACA GCA ATT CTT TTC ACC AGA CAG GAC TTG TGT GGG TCC	179
Q T C D T L G M A D V G T V C D P S R S	79
CAG ACA TGT GAT ACT CTT GGG ATG GCT GAT GTT GGA ACT GTG TGT GAT CCG AGC AGA AGC	239
C S V I E D D G L Q A A F T T A H E L G	99
TGC TCC GTC ATA GAA GAT GAT GGT TTA CAA GCT GCC TTC ACC ACA GCC CAT GAA TTA GGC	299
H V F N M P H D D A K Q C A S L N G V N	119
CAC GTG TTT AAC ATG CCA CAT GAT GAT GCA AAG CAG TGT GCC AGC CTT AAT GGT GTG AAC	359
Q D S H M M A S M L S N L D H S Q P W S	139
CAG GAT TCC CAC ATG ATG GCG TCA ATG CTT TCC AAC CTG GAC CAC AGC CAG CCT TGG TGT	419
P C S A Y M I T S F L D N G H G E C L M	159
CCT TCC AGT GCC TAC ATG ATT ACA TCA TTT CTG GAT AAT GGT CAT GGG GAA TGT TTG ATG	479
D K P Q N P I Q L P G D L P G T S Y D A	179
GAC AAG CCT CAG AAT CCC ATA CAG CTC CCA GGC GAT CTC CTT GGC ACC TCG TAC GAT GCC	539
N R Q C Q F T F G E D S K H C P D A A S	199
AAC CCG CAG TCC CAG TTT ACA TTT GGG GAG GAC TCC AAA CAC TCC CCT GAT GCA GCC AGC	599
T C S T L W C T G T S G G V L V C Q T K	219
ACA TGT AGC ACC TTG TGG TGT ACC GGC ACC TGT GGT GGG GTG CTG GTG TGT CAA ACC AAA	659
H F P W A D G T S C G E G K W C I N G K	239
CAC TTC CCG TGG GCG GAT GGC ACC AGC TGT GGA GAA GGG AAA TGG TGT ATC AAC GGC AAG	719
C V N K T D R K H F D T P F H G S W G M	259
TGT GTG AAC AAA ACC GAC AGA AAG CAT TTT GAT ACG CCT TTT CAT GGA AGC TGG GGA ATG	779
W G P W G D C S R T C G G G V Q Y T M R	279
TGG GGG CCT TGG GGA GAC TGT TCG AGA ACG TGC GGT GGA GGA GTC CAG TAC ACG ATG AGG	839
E C D N P V P K N G G K Y C E G K R V R	299
GAA TGT GAC AAC CCA GTC CCA AAG AAT GGA GGG AAG TAC TGT GAA GGC AAA CCA GTG CCG	899
Y R S C N L E D C P D N N G K T F R E E	319
TAC AGA TCC TGT AAC CTT GAG GAC TGT CCA GAC AAT AAT GGA AAA ACC TTT AGA GAG GAA	959
Q C E A H N E F S K A S F G S G P A V E	339
CAA TGT GAA GCA CAC AAC GAG TTT TCA AAA GCT TCC TTT GGG AGT GGG CCT GCG GTG GAA	1019
W I P K Y A G V S P K D R C K L I C Q A	359
TGG ATT CCC AAG TAC GCT GGC GTC TCA CCA AAG GAC AGG TGC AAG CTC ATC TGC CAA GCC	1079
K G I G Y F F V L Q P K V V D G T P C S	379
AAA GGC ATT GGC TAC TTC TTC GTT TTG CAG CCC AAG GTT GTA GAT GGT ACT CCA TGT AGC	1139

FIG. 5A

P D S T S V C V Q G Q C V K A G C D R I 399
 CCA GAT TCC ACC TCT GTC TGT GTG CAA GGA CAG TGT GTA AAA GCT GGT TGT GAT CCC ATC 1199

I D S K K K F D K C G V C G G N G S T C 419
 ATA GAC TCC AAA AAG AAG TTT GAT AAA TGT GGT GTT TCC GGG GGA AAT GGA TCT ACT TGT 1259

K K I S G S V T S A K P G Y H D I I T I 439
 AAA AAA ATA TCA GGA TCA GTT ACT AGT GCA AAA CCT GGA TAT CAT GAT ATC ATC ACA ATT 1319

P T G A T N I E V K Q R N Q R G S R N N 459
 CCA ACT GGA GCC ACC AAC ATC GAA GTG AAA CAG CGG AAC CAG AGG GGA TCC AGG AAC AAT 1379

G S F L A I K A A D G T Y I L N G D Y T 479
 GGC AGC TTT CTT GCC ATC AAA GCT GCT GAT GGC ACA TAT ATT CTT AAT GGT GAC TAC ACT 1439

L S T L E Q D I M Y K G V V L R Y S G S 499
 TTG TCC ACC TTA GAG CAA GAC ATT ATG TAC AAA GGT GTT GTC TTG AGG TAC AGC GGC TCC 1499

S A A L E R I R S F S P L K E P L T I Q 519
 TCT GCG GCA TTG GAA AGA ATT CGC AGC TTT AGC CCT CTC AAA GAG CCC TTG ACC ATC CAG 1559

V L T V G N A L R P K I K Y T Y F V K K 539
 GTT CTT ACT GTG GGC AAT GCC CTT CCA CCT AAA ATT AAA TAC ACC TAC TTC GTA AAG AAG 1619

K K E S F N A I P T F S A W V I E E W G 559
 AAG AAG GAA TCT TTC AAT GCT ATC CCC ACT TTT TCA GCA TGG GTC ATT GAA GAG TGG GGC 1679

E C S K T C G K G Y K K R S L K C L S H 579
 GAA TGT TCT AAG ACC TGT GGG AAG GGT TAC AAA AAA AGA AGC TTG AAG TGT CTG TCC CAT 1739

D G G V L S H E S C D P L K K P K H F I 599
 GAT GGA GGG GTG TTA TCT CAT GAG AGC TGT GAT CCT TTA AAG AAA CCT AAA CAT TTC ATA 1799

D F C T M A E C S * 609
 GAC TTT TGC ACA ATG GCA GAA TGC AGT TAA 1829

GTGGTTTAAGTGGTGTAGCTCTCAGGGCAAGGCCAAGTGGGGAAGGGCTGGTGCAGGGGAAGCAAGAAGGCTGGAGGG 1908

ATCCAGGCTATCTTCCAGTAACCACTGAGGTGTATCAGTAAGGTGGGATTATGGGGGTAGATAGAAAAGGAGTTGAAT 1987

CATCAGAGTAAGTCCAGTTGCCAATTTGATAGGATAGTTAGTGAAGGATTATTACCTCTGAGCAGTGATATAGCATA 2066

ATAAAGCCCCGGGCATTATTATTATTATTCTTTTGTACATCTATTACAAGTTTAGAAAAACAAAGCAATTGTCAA 2145

AAAAGTGAAGTATTACAACCCCTGTTTCTCTGTACTTATCAAATACTTAGTATCATGGGGGTGGGAATGAAAAGT 2224

AGGAGAAAGTGAGATTTTACTAAGACCTGTTTACTTTACCTCACTAACAATGGGGGGGAAGGAGTACAAATAGGA 2303

TCTTTGACGACGCTGTTTATGGCTGCTATGGTTTCAGAGAATGTTTATACATTATTTCTACCGAGAATTAACCTTCA 2382

GATTGTTCAACATGAGAGAAAGGCTCGCAACGTGAAATAACGCCAAATGGCTTCCCTCTTCTTTTGGACCATCTCA 2461

GTCTTTATTGTGTAAATTCATTTTCAGGAAAAACAACCTCCATGTATTTATTCTAAGTGCATTAAAGTCTACAATGGAAA 2540

AAAAGCAGTGAAGCATTAGATGCTGGTAAAGCTAGAGGAGACACAATGAGCTTAGTACCTCCACTTCCCTTTCTTCC 2619

TACCATGTACCCCTGCTTTGGGAATATGGATGTAAAGAAGTAACTTGTGTCTCATGAAAATCAGTACATCACACAAGG 2698

FIG. 5B

AGGATGAAACGCCCGAACAAAAATGAGGTGTCTAGAACAGGTTCCTCAGGTTTGGGGACATTGAGATCCTTTCTTC	2777
TGGTGGGGAGGGTCTCTGAGGGTACGAGGTCTCTCTGCGAGCTGGTCCACAGTGGTATCCCTGGTGAATGTCTCTTC	2856
AGCTCTCTCTCTGAGAAATATGATTTTTCTCTATGTATATAGTAAAAATATGTTACTATTAATTACATGTACTTTTAAAT	2935
ATTGGTTTGGGTCTCTCTCTCCAGAGGACTATAGTTAGTAAATAATGCCCTATAATAACATATTTATTTTATACATTT	3014
ATTCTAATGAAAAAACCTTTTAAATTATATCCCTTTTGGAACTGCATATAAAATAGAGTATTTATACAATATATGT	3093
TACTAGAAATAAAAGAACCTTTTGGAAAAAAGGGGGGGGGC	3147

FIG. 5C

251 DQSMADFHGSGLKHYLLTLFVVAARFYKHPSTIRNSISLVVVKILVITYEEQ 300
 ||||.:||
 1TRPILVTHDEQ 11

301 KGFEVTSNAALTILRNFCNWKQHNSPDRDPEHYDTAILFTRQDLGGSHT 350
 ||||.:||
 12 KGFEVTSNAALTILRNFCNWKQHNSPDRDPEHYDTAILFTRQDLGGSHT 61

351 CDTLGMADVGVTCDFSRSCSVIEDDGLQAAFTTABELGHVFNMPHDDAKH 400
 ||||.:||
 62 CDTLGMADVGVTCDFSRSCSVIEDDGLQAAFTTABELGHVFNMPHDDAKH 111

401 CASLNGVSGDSHLMASMLSLDHSQPNWSPCSAYMVTSTFLNGHGECIMDK 450
 ||||.:||
 112 CASLNGVSGDSHLMASMLSLDHSQPNWSPCSAYMVTSTFLNGHGECIMDK 161

451 PQNFIQLPGLPGTLYDANRQCQFTFGEDSKHCFDAASTCTLWCTGTSG 500
 ||||.:||
 162 PQNFIQLPGLPGTLYDANRQCQFTFGEDSKHCFDAASTCTLWCTGTSG 211

501 GLLVCQTXHFHWADGTSCGEGKWCVSQKCVNKTDRKHFAFPVHGSNGPWG 550
 ||||.:||
 212 GLLVCQTXHFHWADGTSCGEGKWCVSQKCVNKTDRKHFAFPVHGSNGPWG 261

551 PWGDCSRTCCGGVQYTMRECEINFPVPRNGGKYCEGKRVRYRSCNIEDCPDN 600
 ||||.:||
 262 PWGDCSRTCCGGVQYTMRECEINFPVPRNGGKYCEGKRVRYRSCNIEDCPDN 311

601 NGKTFREEQCEAHNEFSKASFGNEFTVEMTPKZAGVSPKDRCKLTCEARG 650
 ||||.:||
 312 NGKTFREEQCEAHNEFSKASFGNEFTVEMTPKZAGVSPKDRCKLTCEARG 361

651 IGYFFVLQPKVVDGTPCSPDSTSVCVQGCVKAGCDRIIDSKKKFDRCGV 700
 ||||.:||
 362 IGYFFVLQPKVVDGTPCSPDSTSVCVQGCVKAGCDRIIDSKKKFDRCGV 411

701 CCGNGSTCKRMGIVTSTRPGYHDIPTIPAGATNDEVKRNQGRSRRNGS 750
 ||||.:||
 412 CCGNGSTCKRMGIVTSTRPGYHDIPTIPAGATNDEVKRNQGRSRRNGS 461

751 FLAIRAADGTYILNGDTLSTLEQDLTYNGTVLRYSGSSAALERIRSFSP 800
 ||||.:||
 462 FLAIRAADGTYILNGDTLSTLEQDLTYNGTVLRYSGSSAALERIRSFSP 511

801 LKEPLTIQVLMVGHALRPKIKFTYFMKQCESFNAIPTFSENWIEEWGEC 850
 ||||.:||
 512 LKEPLTIQVLMVGHALRPKIKFTYFMKQCESFNAIPTFSENWIEEWGEC 560

901 WSPCSKTCKGKRYKRLKCVSHDGGVLSNESCDPLKPKHYIDFCTLTC 950
 ||||.:||
 561 ...CSKTCKGKRYKRLKCVSHDGGVLSNESCDPLKPKHYIDFCTLTC 607

951 S* 951
 |
 608 S* 609

FIG. 6

gtgcctac atg gtc acg tcc ttc cta gat aat gga cac ggg gaa tgt ttg	50
Met Val Thr Ser Phe Leu Asp Asn Gly His Gly Glu Cys Leu	
1 5 10	
atg gac aag ccc cag aat cca atc aag ctc cct tct gat ctt ccc ggt	98
Met Asp Lys Pro Gln Asn Pro Ile Lys Leu Pro Ser Asp Leu Pro Gly	
15 20 25 30	
acc ttg tac gat gcc aac cgc cag tgt cag ttt aca ttc gga gag gaa	146
Thr Leu Tyr Asp Ala Asn Arg Gln Cys Gln Phe Thr Phe Gly Glu Glu	
35 40 45	
tcc aag cac tgc cct gat gca gcc agc aca tgt act acc ctg tgg tgc	194
Ser Lys His Cys Pro Asp Ala Ala Ser Thr Cys Thr Thr Leu Trp Cys	
50 55 60	
act ggc acc tcc ggt ggc tta ctg gtg tgc caa aca aaa cac ttc cct	242
Thr Gly Thr Ser Gly Gly Leu Leu Val Cys Gln Thr Lys His Phe Pro	
65 70 75	
tgg gca gat ggc acc agc tgt gga gaa ggg aag tgg tgt gtc agt ggc	290
Trp Ala Asp Gly Thr Ser Cys Gly Glu Gly Lys Trp Cys Val Ser Gly	
80 85 90	
aag tgc gtg aac aag aca gac atg aag cat ttt gct act cct gtt cat	338
Lys Cys Val Asn Lys Thr Asp Met Lys His Phe Ala Thr Pro Val His	
95 100 105 110	
gga agc tgg gga cca tgg gga ccg tgg gga gac tgc tca aga acc tgt	386
Gly Ser Trp Gly Pro Trp Gly Pro Trp Gly Asp Cys Ser Arg Thr Cys	
115 120 125	
ggg ggt gga gtt caa tac aca atg aga gaa tgt gac aac cca gtc cca	434
Gly Gly Gly Val Gln Tyr Thr Met Arg Glu Cys Asp Asn Pro Val Pro	
130 135 140	
aag aac gga ggg aag tac tgt gaa ggc aaa cga gtc cgc tac agg tcc	482
Lys Asn Gly Gly Lys Tyr Cys Glu Gly Lys Arg Val Arg Tyr Arg Ser	
145 150 155	
tgt aac atc gag gac tgt cca gac aat aac gga aaa acg ttc aga gag	530
Cys Asn Ile Glu Asp Cys Pro Asp Asn Asn Gly Lys Thr Phe Arg Glu	
160 165 170	
gag cag tgc gag gcg cac aat gag ttt tcc aaa gct tcc ttt ggg aat	578
Glu Gln Cys Glu Ala His Asn Glu Phe Ser Lys Ala Ser Phe Gly Asn	
175 180 185 190	
gag ccc act gta gag tgg aca ccc aag tac gcc ggc gtc tcg cca aag	626
Glu Pro Thr Val Glu Trp Thr Pro Lys Tyr Ala Gly Val Ser Pro Lys	
195 200 205	

FIG. 7A

gac agg tgc aag ctc acc tgt gaa gcc aaa ggc att ggc tac ttt ttc	674
Asp Arg Cys Lys Leu Thr Cys Glu Ala Lys Gly Ile Gly Tyr Phe Phe	
210 215 220	
gtc tta cag ccc aag gtt gta gat ggc act ccc tgt agt cca gac tct	722
Val Leu Gln Pro Lys Val Val Asp Gly Thr Pro Cys Ser Pro Asp Ser	
225 230 235	
acc tct gtc tgt gtg caa ggg cag tgt gtg aaa gct ggc tgt gat cgc	770
Thr Ser Val Cys Val Gln Gly Gln Cys Val Lys Ala Gly Cys Asp Arg	
240 245 250	
atc ata gac tcc aaa aag aag ttt gat aag tgt ggc gtt tgt gga gga	818
Ile Ile Asp Ser Lys Lys Lys Phe Asp Lys Cys Gly Val Cys Gly Gly	
255 260 265 270	
aac ggt tcc aca tgc aag aag atg tca gga ata gtc act agt aca aga	866
Asn Gly Ser Thr Cys Lys Lys Met Ser Gly Ile Val Thr Ser Thr Arg	
275 280 285	
cct ggg tat cat gac att gtc aca att cct gct gga gcc acc aac att	914
Pro Gly Tyr His Asp Ile Val Thr Ile Pro Ala Gly Ala Thr Asn Ile	
290 295 300	
gaa gtg aaa cat cgg aat caa agg ggg tcc aga aac aat ggc agc ttt	962
Glu Val Lys His Arg Asn Gln Arg Gly Ser Arg Asn Asn Gly Ser Phe	
305 310 315	
ctg gct att aga gcc gct gat ggt acc tat att ctg aat gga aac ttc	1010
Leu Ala Ile Arg Ala Ala Asp Gly Thr Tyr Ile Leu Asn Gly Asn Phe	
320 325 330	
act ctg tcc aca cta gag caa gac ctc acc tac aaa ggt act gtc tta	1058
Thr Leu Ser Thr Leu Glu Gln Asp Leu Thr Tyr Lys Gly Thr Val Leu	
335 340 345 350	
agg tac agt ggt tcc tcg gct gcg ctg gaa aga atc cgc agc ttt agt	1106
Arg Tyr Ser Gly Ser Ser Ala Ala Leu Glu Arg Ile Arg Ser Phe Ser	
355 360 365	
cca ctc aaa gaa ccc tta acc atc cag gtt ctt atg gta ggc cat gct	1154
Pro Leu Lys Glu Pro Leu Thr Ile Gln Val Leu Met Val Gly His Ala	
370 375 380	
ctc cga ccc aaa att aaa ttc acc tac ttt atg aag aag aag aca gag	1202
Leu Arg Pro Lys Ile Lys Phe Thr Tyr Phe Met Lys Lys Lys Thr Glu	
385 390 395	
tca ttc aac gcc att ccc aca ttt tct gag tgg gtg att gaa gag tgg	1250
Ser Phe Asn Ala Ile Pro Thr Phe Ser Glu Trp Val Ile Glu Glu Trp	
400 405 410	

FIG. 7B

ggg gag tgc tcc aag aca tgc ggc tca ggt tgg cag aga aga gta gtg 1298
 Gly Glu Cys Ser Lys Thr Cys Gly Ser Gly Trp Gln Arg Arg Val Val
 115 420 425 430

 cag tgc aga gac att aac gga cac cct gct tcc gaa tgt gca aag gaa 1346
 Gln Cys Arg Asp Ile Asn Gly His Pro Ala Ser Glu Cys Ala Lys Glu
 435 440 445

 gtg aag cca gcc agt acc aga cct tgt gca gac ctt cct tgc cca cac 1394
 Val Lys Pro Ala Ser Thr Arg Pro Cys Ala Asp Leu Pro Cys Pro His
 450 455 460

 tgg cag gtg ggg gat tgg tca cca tgt tcc aaa act tgc ggg aag ggt 1442
 Trp Gln Val Gly Asp Trp Ser Pro Cys Ser Lys Thr Cys Gly Lys Gly
 465 470 475

 tac aag aag aga acc ttg aaa tgt gtg tcc cac gat ggg ggc gtg tta 1490
 Tyr Lys Lys Arg Thr Leu Lys Cys Val Ser His Asp Gly Gly Val Leu
 480 485 490

 tca aat gag agc tgt gat cct ttg aag aag cca aag cat tac att gac 1538
 Ser Asn Glu Ser Cys Asp Pro Leu Lys Lys Pro Lys His Tyr Ile Asp
 495 500 505 510

 ttt tgc aca ctg aca cag tgc agt taagaggcgt tagaggacaa ggtagcgtgg 1592
 Phe Cys Thr Leu Thr Gln Cys Ser
 515

 ggaggggctg atacactgag tgcaagagta ctggagggat ccagtgagtc aaaccagtaa 1652
 gcagtgaggt gtggcaagga ggtgtgtgta ggggatacat agcaaaggag gtagatcagg 1712
 acaactacct gccagttaca ttctgataag gtagttaatg aggcacagta gcatctgaaa 1772
 gaccatacag agcactaagg agcccaaaag cactattagt atctcttttc ttatatctat 1832
 cgcccaaata attttcagag tctggcagaa gccctgttgc actgtactaa ctagatactt 1892
 cttatcacaa agattgggaa aggcaaagca gaaagatggg aagactgggt ttcaaaacaa 1952
 gcttggtttc aatcactgga ggcaaggagg aggggacaaa caagatcatt attcgaagtc 2012
 gctggttgct gtggtttttac ggaagggtga tgcattcatc ctatcaacag tgaaaagttc 2072
 agcttgttca acgtgacaga aaggctcatc tccgtgaaaag agctcctgat ttcttcttac 2132
 accatctcag ttcttaacta tagttcatgt tgaggtagaa acaattcatc tatttataaa 2192
 atgtacattg gaaaaaaaaa gtgaagttta tgaggtagac ataaaaactg aaggaaacaa 2252
 tgagcaacat gctcctgct ttgcttctc ctgaggtaaa cctgcctggg gattgaggtt 2312
 gtttaagatt atccatggct cacaagaggc agtaaaataa tacatgttgt gccagagtta 2372
 gaatggggta tagagatcag ggtcccatga gatggggaac atggtgatca ctcatctcac 2432
 atgggaggct gctgcagggt agcaggcca ctcctggcag ctgggtccaac agtcgtatcc 2492
 tgggtgaatgt ctgttcagct cttctactga gagagaatat gactgtttcc atatgtatat 2552
 gtatatagta aaatatgtta ctatgaattg catgtacttt ataagtattg gtgtgtctgt 2612
 tccttctaag aaggactata gtttataata aatgcctata ataacatatt tatttttata 2672
 catttatttc taatgataaa acctttaagt tatatcgctt ttgtaaaagt gcatataaaa 2732
 atagagtatt tatacaatat atgttaacta gaaataataa aagaacactt ttgaatgtgt 2792
 atgcctatct tctggagtgg gattaacttc tgggcaagaa atctgatgag acacaaacat 2852
 tggacttcaa gacagtttta aattttgggt aaatgaactg tatttcctgt ttatagacgt 2912
 actaataaaa aagaagttga tgatgtcttt agtggtaaga ttgttactaa tgtggttggc 2972
 aaattgctgt aaagagccag atagtaagca tttatggcat tgtaggctat ctttctgccc 3032
 acaaccatgt gacagtgagt gctttgtagg actgagagca gccataaatg acatgtaaat 3092
 gataaactgt ggctgtgctt taataaaaact ttatttacaa aaaaaaaaaa aaa 3145

FIG. 7C

gagggcgctc	ccggccgggc	caagggacag	agccaggctc	cgaggagccc	caacactcgt	60
cctgagagcc	ccggctcctc	agcccgtac	ggccagggcc	tgggctccg	cccccgactc	120
ccgagctcct	gccctagagt	cgactyggct	cccggccgcg	tgggacagac	agacggacag	180
ccagccctgc	gagggcgcg	ggaccgggcg	gaggtgtgt	aggaggagac	cgaggagggg	240
ggctgggctg	gggctggggc	cgcgccggca	agagagacat	gcgattggtg	accaagccga	300
gcggacggac	agcgcgccc	ag	atg	cag	gtg	352
		Met	Gln	Val	Ser	
		1		5		10
ggt atg aga agc atg ccc agc ccc ctc ctg gcc tgc tgg cag ccc atc	400					
Gly Met Arg Ser Met Pro Ser Pro Leu Leu Ala Cys Trp Gln Pro Ile						
15 20 25						
ctc ctg ctg gta ctg ggc tca gtg ctg tca ggc tct gct aca ggc tgc	448					
Leu Leu Leu Val Leu Gly Ser Val Leu Ser Gly Ser Ala Thr Gly Cys						
30 35 40						
ccg ccc cgc tgc gag tgc tca gcg cag gac cga gcc gtg ctc tgc cac	496					
Pro Pro Arg Cys Glu Cys Ser Ala Gln Asp Arg Ala Val Leu Cys His						
45 50 55						
cgc aaa cgc ttt gtg gcg gtg ccc gag ggc atc ccc acc gag act cgc	544					
Arg Lys Arg Phe Val Ala Val Pro Glu Gly Ile Pro Thr Glu Thr Arg						
60 65 70						
ctg ctg gac ctg ggc aaa aac cgc atc aag aca ctc aac cag gac gag	592					
Leu Leu Asp Leu Gly Lys Asn Arg Ile Lys Thr Leu Asn Gln Asp Glu						
75 80 85 90						
ttt gcc agc ttc cca cac ctg gag gag cta gaa ctc aat gaa aac atc	640					
Phe Ala Ser Phe Pro His Leu Glu Glu Leu Glu Leu Asn Glu Asn Ile						
95 100 105						
gtg agc gcc gtg gag cca ggc gcc ttc aac aac ctc ttc aac ctg agg	688					
Val Ser Ala Val Glu Pro Gly Ala Phe Asn Asn Leu Phe Asn Leu Arg						
110 115 120						
act ctg ggg ctg cgc agc aac cgc ctg aag ctt atc ccg ctg ggc gtc	736					
Thr Leu Gly Leu Arg Ser Asn Arg Leu Lys Leu Ile Pro Leu Gly Val						
125 130 135						
ttc acc ggc ctc agc aac ttg acc aag ctg gac atc agt gag aac aag	784					
Phe Thr Gly Leu Ser Asn Leu Thr Lys Leu Asp Ile Ser Glu Asn Lys						
140 145 150						
atc gtc atc ctg cta gac tac atg ttc caa gac cta tac aac ctc aag	832					
Ile Val Ile Leu Leu Asp Tyr Met Phe Gln Asp Leu Tyr Asn Leu Lys						
155 160 165 170						
tgc ctg gag gtc ggc gac aac gac ctc gtc tac atc tcc cat cga gcc	880					
Ser Leu Glu Val Gly Asp Asn Asp Leu Val Tyr Ile Ser His Arg Ala						
175 180 185						

FIG. 8A

[illegible]

1

atcctcaccg gaagttcggg gccagaggct gctcctgcc cgcgcgcgct ccgcgatct 710
gtggaccagg atttgggtcc cgagggtgcc cctgagaacg tactgggggc tctgctacgc 770
gtcaaacgcc tggagaaccc ctgcgcccag gcgcgcggac gccgcctcct qcctccctga 830

FIG. 9A

gcgctgctgc atcctgcacg ccctggaacc caggagcgcc ccagcaaccc tgactccctg 890
ccagcacgtc caaggctgct tccccagca acctcccatc ccctgagccc tcaataaatg 950
ccatctgtag caaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1010
aaaaaaaaaa aaaaaaa 1027

FIG. 9B

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